

REMARKS

The present amendment is prepared in accordance with the new amendment standards under 37 C.F.R. § 1.121. A marked-up copy of the claims is provided above. In the marked-up version of the claims, inserted material is underlined and deleted material has a line there through.

Applicants appreciate the thoroughness with which the Examiner has examined the above-identified application. Reconsideration is requested in view of the amendments above and the remarks below.

Allowable subject matter

Claims 4-7, 10-13 and 17-20 have been indicated as being allowable if rewritten in independent form to include all limitations of the base claim and any intervening claims. Claims 4-7 have been rewritten as independent claims 21-24, respectively, including all limitations of base claim 1. Claims 10-13 have been rewritten as independent claims 25-28, respectively, including all limitations of base claim 8. Claims 17-20 have been rewritten as independent claims 29-32, respectively, including all limitations of base claim 14.

Rejection under 35 USC § 102

Claims 1-3, 8, 9 and 14-16 have been rejected under 35 USC § 102(e) as being unpatentable over Credendino U.S. Patent No. 6,436,595. Applicants respectfully traverse the rejection.

Applicants' invention is directed to a method and system for determining overlay error in an integrated circuit made by a lithographic process. Rather than use the prior

art methods of using conventional structures in the field kerf, i.e., open spaces between active circuit areas, the present invention uses measurement features that correspond substantially to actual active circuit features. Moreover, while actual active circuit features may be overlaid on one another in the active circuit areas, the present invention displaces the kerf measurement features from one another in a direction perpendicular to the direction that the overlay error is to be determined.

Unlike the present invention, the Credendino patent utilizes conventional box-in-box measurement or target structures for overlay measurements. See Credendino Fig. 1A, items 111-114. Credendino does not use kerf measurement features that correspond substantially to actual active circuit features. Credendino shows such actual active circuit features as items 101 and 102 in Fig. 1B, and nowhere discloses or suggests that his kerf measurement features should correspond substantially to such actual active circuit features. When Credendino discusses the measurement of overlay error in column 9, lines 31-42, it is with respect to measurements of the box-in-box targets, and not to any kerf targets that correspond substantially to such actual active circuit features, as applicants' invention claims.

In the specification of the instant application, applicants explain how the kerf measurement features correspond substantially to their respective active circuit features:

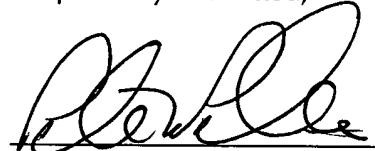
By a substantially corresponding structure or design feature is meant that the structure or design feature is substantially replicated with respect to the features in issue, for example edges, and under the same design rule. Preferably, the kerf measurement feature is reproduced as closely as practical, and more preferably the kerf measurement feature replicates the size and pitch of the corresponding active feature in the circuit pattern, as well as its shape and its proximity to other structures, as closely as possible. Thus, the kerf measurement feature corresponds substantially to the corresponding active circuit feature.

Specification page 7, lines 21-28. By utilizing the replicated features of the active circuit features, and the separation of the kerf measurement features, more accurate overlay measurements are possible, without reducing the amount of active circuit area on a semiconductor wafer.

To further patentably distinguish the present invention from the cited prior art, applicants have amended independent claims 1, 8 and 14 to specify that each kerf measurement feature replicates size, pitch or shape of the respective corresponding active circuit feature, or proximity of the corresponding active feature to any other structure. Nowhere in the Credendino patent is there any disclosure or suggestion of substituting for the box-in-box targets any kerf measurement features that replicate these aspects of active circuit features. Thus, applicants' claimed invention is both novel over, and unobvious from, the Credendino patent.

It is respectfully submitted that the application has now been brought into a condition where allowance of the entire case is proper. Reconsideration and issuance of a notice of allowance are respectfully solicited.

Respectfully submitted,

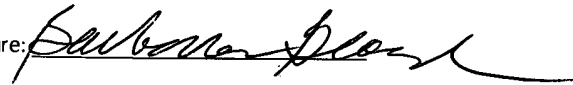


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Name: Barbara Browne Date: August 27, 2003 Signature: 

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